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000064246

DATE: June 8, 1993

TO: Distribution

FROM: P. J. Laurin, Remediation Project Management, Bldg. 080, X8702

SUBJECT: REVIEW OF THE OPERABLE UNIT NO. 6 (OU6) TECHNICAL MEMORANDUM ON COMPUTER MODELS FOR RISK ASSESSMENT - PJL-003-93

Technical Memorandum (TM) No. 3 for OU6, Walnut Creek, is enclosed for your review. This TM outlines the computer models that will be used to transport contaminants to humans in support of the human health risk assessment for the OU6 Resource Conservation and Recovery Act (RCRA) Facility Investigation\Remedial Investigation (RFI\RI) Report.

Please provide comments on this TM by June 21, 1993. If you have any questions or comments, please contact me.

dql

Enclosure:
As Stated

Distribution

D. Arrenholz
D. B. Barber
W. Belcher
A. D. Berzins
R. J. Crocker
G. Manning
S. M. Nesta
B. L. Roberts
R. S. Roberts
D. M. Smith

cc:
W. S. Busby

Pete,
I read through.
Looks OK
No comments
Barry
6/22/93

1/9

2210

Major changes to the modeling TM:

1. Document has been reformatted to fit as an appendix to the OU6 workplan.
2. Section 1.2, Site Location and General Site Conditions, has been reduced to 1 paragraph referencing the W.P. and the EATM.
3. Section 2.0 General Conceptual Model of OU6, has been significantly reduced to omit duplication with the EATM, which contains the detailed discussion of the conceptual site model.
4. Section 3.2, Groundwater Contaminant Fate and Transport Model, has been rewritten to (1) delete references to the ONED3 analytical model, and to (2) discuss current source information for groundwater contaminants, and (3) describe the limited groundwater modeling that will take place.
5. Section 3.3, Surface Water Model, has been revised to accommodate the new model version (HSPF10).

Author Rotha Randall
Date: June 1995

Woodward-Clyde **Memorandum**

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To: Ed Mast

From: Susan Buth SM Buth

Office: WCFS Denver

Date: October 26, 1993

Subject: Notes and Thoughts on the PRC Comments to the Modeling Technical Memorandum, Operable Unit No. 6
Project No. 4036

The following are some general comments we had regarding the PRC comments to the Modeling Tech Memo. Rick Newill has also prepared a memo for Wayne/Barry regarding the ONED3 model. This is for internal discussion only, and not for distribution.

General Comment (2-1, 4-2, 4-3, 5-1, 5-2) - The commenters suggest that data summary and site-specific data tables be prepared to show the inputs to the models. The Modeling TM was prepared prior to receipt of field data related to OU-6, therefore, it was not possible to include site-specific data. Where these data would be used for inputs, the tables stated that site-specific data would be used. Models will be representative of site conditions, and where site-specific data are not available, conservative literature estimates will be used.

Comments regarding exposure scenarios (3-2, 3-3, 3-4) - These comments relate to issues currently being addressed by the regulators and the risk assessment people.

The ONED3 model (4-1) - While conditions at OU-6 may not match the ONED3 conditions listed in the comment, no model is perfect to describe site conditions at RFP. In addition, the data available in the Phase I investigation of OU-6 are not appropriate to use in a more complicated model. Where the model assumes conditions that are not necessarily present at OU-6, we planned to use conservative estimates.

Bedrock groundwater in OU-6 (4-4) - The Phase I Work Plan did not include characterization of groundwater in bedrock units.

Large lakes or reservoirs in OU-6 (5-3) - There are none. Field data indicate that the ponds are mixed (i.e. no stratification).

ISCST model versus FDM (6-1) - ISCST and FDM are both EPA-approved models. FDM is selected over ISCST because of its ability to estimate both air quality concentration and deposition impacts. FDM also has an improved algorithm for considering effects of differential deposition as a result of varied particulate sizes as compared to ISCST.

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Woodward-Clyde Consultants

Cumulative effects of contaminant sources in air modeling (6-3) - the decision on how the sources are aggregated, if at all, will come from the results of the HHRA exposure assessment decision.

Extremely Preliminary Chemical Results to Date (Based on available data, without statistical comparison to background. The data base is not complete.)

Surface Soils - Some metals concentrations exceeding UTLs at individual locations throughout the OU. Rads (Pu and Am, some U) exceed UTLs at IHSSs 141 and 165 (Sludge Dispersal Area and Triangle Area). A few rad hits (primarily Am) have also been found at other IHSSs.

Groundwater - No rads detected to date. Organics (up to 11 ug/l) are detected in one well in IHSS 143 (Old Outfall), during two quarters. No other organics are detected. 29/8 ~ 75% data back

Sediments - PCBs are detected in sediment samples from the ponds. Cs is high in Pond B-1. Have not fully evaluated rads. Not evaluated metals yet.

Subsurface Soils - Some metals exceeding UTLs at individual locations throughout the OU. One organic detected at IHSS 143. Rads not evaluated yet. 127 sites

Surface Water - Not evaluated yet.

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COMMENT RESPONSES FOR
TECHNICAL MEMORANDUM #3, MODEL DESCRIPTION
AT OPERABLE UNIT 6
R.S. ROBERTS

to 11/4/93
FAXED TO
WCFS Same Day

3.0 CONCEPTUAL MODEL

General Comments

3-1 A brief discussion of the potential contaminant sources at OU 6 will be added.

3-2 The exposure scenarios and exposure pathways to be used at OU 6 are delineated in Technical Memorandum #2, "Exposure Scenarios." Any changes due to comment resolution on technical memorandum #2 will automatically apply to technical memorandum #3.

Specific Comments

3-3 The exposure scenarios and exposure pathways to be used at OU 6 are delineated in Technical Memorandum #2, "Exposure Scenarios." Any changes due to comment resolution on technical memorandum #2 will automatically apply to technical memorandum #3.

3-4 The exposure scenarios and exposure pathways to be used at OU 6 are delineated in Technical Memorandum #2, "Exposure Scenarios." Any changes due to comment resolution on technical memorandum #2 will automatically apply to technical memorandum #3.

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Date: 11/4/93

FACSIMILE TRANSMITTAL COVER SHEET

To: Susan Butts
From: Ed Mast
FAX No: 740 - 2705
(FAX No: (303) 966-8556)
Organization: WCFS
(Verify: (303) 966-   )
Organization:
Phone:

Comments: Here are Rick's ~~cor~~ responses for the exposure scenario OU6

call if you have questions
thanks
Ed

Total Pages (Including cover sheet): 2

6

MEMORANDUM

6

TO: P. Laurin
FROM: W. Belcher
RE: TM-3 Comments regarding ground-water modeling sections

1. Page 3-2. I think the phrase 'groundwater in the saturated zone' is somewhat redundant, since groundwater, by definition occurs in the saturated zone.

2. Page 3-4: "Verification of the model code is easily performed using published analytical equations." It is my understanding that ONED3 is based on an analytical equation and as such, is an analytical equation, i.e., an exact solution to the transport equation given certain boundary conditions. I think that this should be stated.

3. Page 3-4: "...is readily available with complete documentation." I don't think that a 3 to 4 page description of the program can be called 'complete documentation'.

4. Page 3-4: I believe that this is the first use of 'IGWMC' and it is not defined before.

5. Page 3-4 and 3-5: In the description of the Selection Criterion 5 no details concerning the practical and cost-effective use of ONED3 are given. It is simply stated that it is. I also think that some mention of how uncertainty is to be looked at should be mentioned.

6. Table 3-1: Are any values and/or locations for potential sources identified? If so, I think that they should be included in this table.

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DATE: June 18, 1993

TO: Rick Roberts

FROM: Dan Arrenholz DA

SUBJECT: COMMENTS: OU-2 TECHNICAL MEMORANDUM NO. 3, MODEL DESCRIPTION

1. p. 3-1, Sec. 3.1 - This discussion seems a little confusing - if the models selected need to be capable of incorporating key on-site processes and the conditions (physical and chemical) of the site are continuing to be characterized, how can adequate/appropriate models be selected?

2. Sec. 3.2, 3.3, 3.4, and 3.5 - In order to show which models were considered, a matrix listing the models considered and how each compared to the selection criteria and features of the models would be very useful. Suggest adding this to demonstrate that such a comparison was performed and was adequate.

3. p. 3-3, Sec. 3.2 - ONED3 was selected "because it is believed to satisfy ..." - was a comparison performed or not? Suggest rewording to indicate that the comparison with other models was performed and ONED3 was found to be the best.

4. Sec. 3.3 - Can HSPF9 handle inputs from and losses to groundwater? This is mentioned once later on in the discussion of the model, but it would be nice if this capability was discussed clearly earlier on in the discussion.

5. p. 3-7, Sec. 3.3.2 - Ambrose and Barnwell may not be entirely independent experts - Ambrose is in charge of the Center for Exposure Assessment Modeling and probably played a role in the development of HSPF9. Has anyone else evaluated the model?

6. Sec. 3.4.1 - Strongly suggest building two subsections around equation (1) and equation (3). As the discussion currently stands, it is difficult to tell that the equations are for two completely different processes.

7. Sec. 3.4.1 - Why was t_d derived in this discussion? As it only appears in equation (6), its purpose is unclear. Please clarify or discuss further.

8. p. 3-13, Sec. 3.5.1 - 1st paragraph - The first sentence does not make sense. Please clarify.

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9. p. 3-13, Sec. 3.5.1 - 1st paragraph - The first sentence does not make sense. Please clarify. Also, this discussion is confusing - it talks about one model on-site, models off-site, and both models. Please use model names or otherwise clarify what is happening here.

10. p. 3-14, Sec. 3.5.2, 1st paragraph - "transportation of airborne particulate" Is there only one?

11. p. 3-15, 4th paragraph - "source tern" Enough said. Also, What compounds have been identified? The COC tech. memo is written after this memo, but this statement implies that COCs have already been selected. Considering the earlier statement that the investigations are ongoing, this is not good. And what does "that is multiplied by the estimated ambient impacts from a unit emission rate" mean?

12. Sec. 3.6 - This appears to be a listing of the parameter needs for the models, as well as available values. If so, this should be clear in the discussion so that the reader is aware that this is, indeed, the case. Using the names of the models in the headers for the tables would also be a useful touch. Literature values and model defaults should be used as sparingly as possible, for obvious reasons. Perhaps a discussion of which values will be used or developed on an RFP-specific basis could be included here to put readers, especially the agencies, at ease.

    Also, will a sensitivity analysis be performed on the various parameters for different models? Such an analysis will show which parameters have the greatest effect on model output and, as a result, help focus data collection efforts on those parameters to which the models are most sensitive.

13. Table 3-1 - typo - "Howard, al. (1991)"

14. Table 3-2 - typos - "conststnt" and "biodegredation". Also, is it "medium diameter of bed sediments" or median diameter.

    In addition, provision of a range for RFP/OU specific values is probably of limited use, particularly when the range given spans several orders of magnitude. This is an example of a case in which a sensitivity analysis would be of great utility.

15. Strongly suggest using the RFP Site Environmental Report for the latest year, rather than the 1990 report. I know the 1991 report has been released, and the 1992 report is right around the corner, so why not reference those?

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